

ON A REMARKABLE MODIFICATION OF THE EIGHTH ABDOMINAL  
SEGMENT IN *LINDERA TESSALATELLA*, WITH A DESCRIPTION  
OF THE MALE AND FEMALE GENITALIA.

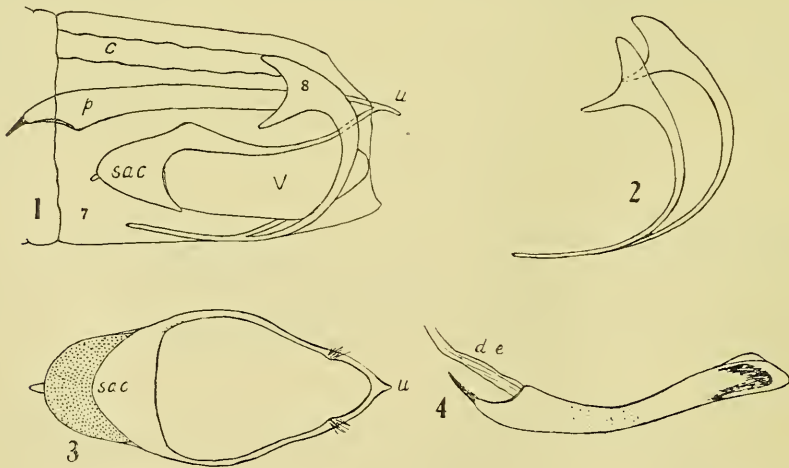
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(Communicated by Mr. E. C. Andrews.)

(Nine Text-figures.)

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The species under notice was described by Blanchard in 1852 (*Hist. fis. y pol. Chile*, Zool., vol. 7, p. 105). It is a well-known Australian species and is now established in New Zealand, at least in the North Island, and in Nelson in the South Island.

In the following paper it is proposed to give a description of the male and female genitalia, there being some features of special interest in these structures.



Text-figs. 1-4.—*Lindera tessalateLLa* Blanch.

1.—Lateral view of terminal segments of male, showing normal position of genitalia. *c*, colon; *p*, penis; *sac*, saccus; *u*, uncus; *v*, valva; 7, seventh segment; 8, modified eighth segment. 2.—Modified eighth segment, obliquely lateral view. 3.—Tegumen, from beneath. *sac*, saccus; *u*, uncus. 4.—Penis. *d.e.*, ductus ejaculatorius.

*The Male Genitalia.*

The abdomen, normally, shows only seven segments, the genitalia being withdrawn within the last one (Text-fig. 1). The ninth sternite forms a large saccus, the cavity of which receives the rounded basal part of the valvae; basally it bears a small finger-like projection. The saccus merges, without articulation, into the ninth tergite (forming the upper part of the tegumen), which is thin and hoop-like, a short slender uncus springing from its apex (Text-fig. 3, also Text-fig. 1).

*The valvae.*—The valvae (Text-fig. 5) are broad and rather concave, but much narrowed on the apical fourth. The upper part of the base is deeply excavate, leaving only a narrow portion of the costal margin projecting. The armature is feeble, consisting only of a series of short blunt spines round the edge of the narrow apical part, and a few weak hairs.

*The penis.*—The penis (Text-fig. 4) is a blunt, slightly-curved organ. The aedeagus is not strongly chitinised and bears no armature. Its base is curvedly truncate, forming a large aperture, into which the rather small *ductus ejaculatorius* enters.

*The modified eighth segment.*—Embracing the genitalia as they lie in their ordinary position is a strongly chitinised structure (Text-fig. 2, see also Text-fig. 1). It begins as a thin rod lying beneath the saccus, but, after passing under the valvae for a short distance, it divides into two branches which curve upwards, one on each side of these organs. Its upper portion is recurved, much broadened and divided apically into two prongs, the upper pair of which nearly meet dorsally. The valvae, tegumen and penis all lie within it and its function is evidently to act as a support for these structures, providing a strong, and at the same time elastic, control. It should also be noted that the lower prongs are so directed as to pass over the penis, thus giving additional protection.

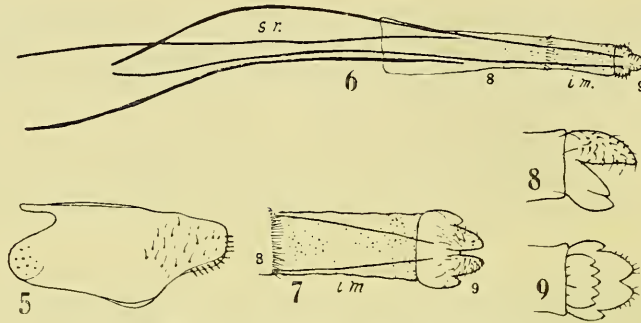
No such organ as the one here described had been previously met with by the writer in connection with the genitalia of the Lepidoptera. Though extremely puzzling at first sight as to origin and homology, it became a simple matter when it was recognised that here we had merely the eighth segment, or possibly the eighth sternite only, which had become modified into a spring-like band to support and protect the all-important terminal organs of the abdomen.

*The Female Genitalia.*

The copulatory opening, *ductus bursa*, and copulatory pouch offer no unusual features and need not be further referred to, but the ovipositor exhibits some interesting peculiarities. When in a position of rest the eighth and ninth segments, which form an elongated ovipositing tube, are in great part withdrawn within the abdomen. The ninth is telescoped within the eighth, except for the swollen apex, and the eighth is, in turn, retracted within the seventh, only the inter-segmental membrane protruding. A ring of bristles marks the apex of the eighth segment, and apparently acts as a guide for the correct degree of withdrawal. When fully exerted these two segments, with their connecting membrane, make up about two-fifths of the whole length of the abdomen.

The segmental rods (Text-fig. 6) are very long; in the normal position of the abdomen those of the ninth reach to just within the fourth segment, while those of the eighth extend almost to the third, their extremities being curved strongly upwards so as nearly to touch the dorsal wall of the segment.

The ninth segment terminates in a rosette-shaped opening which can best be understood by reference to the figures (Text-figs. 7, 8 and 9). The dorsal part of this rosette consists of an apically bifid lobe, bearing a number of curved hairs. The function of these hairs, which are curved backwards and outwards, is probably, by engaging with the material among which the eggs are being laid, to hold the end of the abdomen in the desired position. There is a small lateral piece and a fairly large ventral one, divided into five lobes.



Text-figs. 5-9.—*Lindera tessalateLLa* Blanch.

5.—Valva, from within. 6.—Terminal segments of abdomen of female. 8 eighth segment; 9, ninth segment; *i.m.*, intersegmental membrane; *s.r.*, segmental rods. 7.—Dorsal view of "rosette." 8, eighth segment; 9, ninth segment; *i.m.*, intersegmental membrane. 8.—Lateral view of "rosette." 9.—Ventral view of "rosette."

Though the actual act of oviposition in *Lindera* does not appear to have been observed, it seems highly probable, judging from the structure of the ovipositing organ, that the eggs are laid in cracks or crevices, such as would be beyond the reach of a shorter structure. Mr. J. G. Myers has reared the moth from larvae found in old sacking and rubbish; doubtless the elongated organ would be suitable for the deposition of eggs in the interstices of such material.